

WHAT IS CLAIMED IS:

1. A projection type image display apparatus comprising:
  - an image forming element which forms an original image;
  - a projection optical system capable of focusing, which projects light from the image forming element onto a projection surface;
  - a photoreception sensor which receives light from the projection surface; and
  - a controller which performs focusing control of the projection optical system based on an output signal from the photoreception sensor,

wherein the optical axis of the projection optical system is shifted with respect to a reference axis ,the reference axis leading from the center of the original image formed on the image forming element to the center of the projected image, and

the photoreception sensor receives light from a detection area which is proximate to and includes the position of the optical axis of the projection optical system on the projection surface.
2. The projection type image display apparatus according to claim 1, wherein the detection area is set substantially centered on the position of the optical axis of the projection optical system on the projection surface.

3. A projection type image display apparatus comprising:

- an image forming element which forms an original image;
- a projection optical system capable of focusing, which projects light from the image forming element onto a projection surface;
- a photoreception sensor which receives light from the projection surface; and
- a controller which performs focusing control of the projection optical system based on the output signal from the photoreception sensor,

wherein the photoreception sensor receives light from a detection area including a boundary between an image projection area and a non-image area on the projection surface.

4. The projection type image display apparatus according to claim 3, wherein the projection field angle of the projection optical system is changeable, and

- the detection area of the photoreception sensor is set so as to include the boundary in the entire changeable range of the projection field angle.

5. The projection type image display apparatus according to claim 3, wherein the optical axis of the projection optical system is shifted with respect to a reference axis, the reference axis leading from the center of the original image formed on the image forming element to the center of

the projected image.

6. The projection type image display apparatus according to claim 3, wherein the apparatus projects a full white image, a full gray image or an image which corresponds to them when the controller performs focusing control of the projection optical system.

7. The projection type image display apparatus according to claim 6, wherein the full white image, full gray image or image which corresponds to them is formed by using a hardware function of a character generator.

8. A projection type image display apparatus comprising:  
an image forming element which forms an original image;  
a projection optical system capable of focusing, which projects light from the image forming element onto a projection surface;

a photoreception sensor which receives light from the projection surface; and

a controller which performs focusing control of the projection optical system based on an output signal from the photoreception sensor,

wherein the photoreception sensor comprises a pair of line sensors arranged apart in a base line length direction,

the detection area of the photoreception sensor includes one side of the projected image ,and

the base line length direction is substantially orthogonal to the one side .

9. A projection type image display apparatus comprising:  
an image forming element which forms an original image;  
a projection optical system capable of focusing, which projects light from the image forming element onto a projection surface;

a photoreception sensor which receives light from a detection area set on the projection surface; and

a controller which performs focusing control of the projection optical system based on an output signal from the photoreception sensor,

wherein the photoreception sensor comprises a pair of line sensors arranged apart in a base line length direction,

the optical axis of the projection optical system is shifted with respect to a reference axis ,the reference axis leading from a center of the original image formed on the image forming element to the center of the projected image,

the detection area of the photoreception sensor includes a side closest to the optical axis of the projection optical system among circumferential sides of the projected image, and

the base line length direction of the pair of line sensors is substantially orthogonal to the side closest to the optical axis of the projection optical system.

10. A projection type image display system comprising:  
the projection type image display apparatus according  
to claims 1; and  
an image signal supply apparatus which supplies an  
image signal for displaying an original image on the image  
forming element to the projection type image display  
apparatus.

11. A projection type display apparatus comprising:  
an element which forms an image;  
a projection optical system which obliquely projects  
the image formed on the element onto a projection surface,  
the optical axis of the projection optical system being  
inclined with respect to the projection direction of the  
image; and  
a photoreception sensor which receives light from the  
projection surface in a direction substantially parallel to  
the optical axis of the projection optical system.

12. The projection type display apparatus according to  
claim 11, further comprising a processor which obtains the  
distance from the projection surface based on an output from  
the photoreception sensor.

13. The projection type display apparatus according to  
claim 11, further comprising a controller which performs  
focusing of the projection optical system based on an output

from the photoreception sensor.

14. The projection type display apparatus according to claim 13, further comprising a temperature sensor which measures temperature,

wherein the controller performs focusing of the projection optical system based on the measurement result of the temperature sensor.

15. A projection type display apparatus comprising:

an element which forms an image;

a projection optical system which obliquely projects the image formed on the image forming element onto a projection surface, the optical axis of the projection optical system being inclined with respect to the projection direction of the image; and

a photoreception sensor which receives light from the projection surface,

wherein a first angle formed by the photoreception direction of the photoreception sensor with respect to the optical axis of the projection optical system is smaller than a second angle formed by the photoreception direction of the photoreception sensor with respect to the projection direction of the image.